Editorial

Malaria - Still Unconquered

Rajeev Soman*

The mere mention of malaria evokes visions of the devastating effects of this still unconquered disease. Just how much damage it inflicts is highlighted by a recent observational study of the natural history of complicated falciparum malaria reported in this issue1 of the journal. The authors found cerebral malaria, jaundice and renal failure as the most common combination of multiorgan dysfunction. The mortality rate rose from 14.6% in patients with a single organ dysfunction to 100% in those with multiorgan dysfunction.

The previous major study on malaria reported in the journal related to cerebral manifestations of malaria.2 How does such tissue and organ system damage occur when there is no known malaria toxin? The sporozoites injected by the mosquito invade hepatocytes by attachment to the heparan sulfate glycoproteins and LDL receptors.3 While invasion by P. vivax is restricted to the reticulocytes, P. falciparum invades RBCs of all stages. Cycles of invasion and growth in RBCs produce a parasite biomass that enlarges exponentially causing fever, anemia and sequestration in microvascular beds. Rosetting and cytoadherence mediated by PfEMP-1 is central to the pathogenesis of severe falciparum malaria.4 These proteins exposed on RBC knobs have domains that adhere to host molecules including CD36 in the systemic vasculature, ICAM-1 in the cerebral circulation and syncytiotrophoblastic CSA in the placenta.5-7 Sequestration and binding stimulates local inflammatory cytokines and mediators such as TNFα and NO. Functional obstruction occurs rather than physical occlusion as in a thrombotic stroke. Delivery of oxygen and glucose is reduced, but recovery can occur rapidly in most patients.

Metabolic acidosis, hypoglycemia, non-convulsive status epilepticus, superimposed bacterial infection are the consequences of this infection. Therefore severe falciparum malaria must be treated as a medical emergency.

The diagnosis of severe falciparum malaria is established by any of the features set out by WHO, in the presence of P. falciparum infection and with reasonable exclusion of an alternative diagnosis.8 Blood smears should be prepared and examined by experienced personnel when the clinical presentation is compatible. New rapid diagnostic tests are also useful to compliment diagnostic efforts when expert microscopy is unavailable.9

Acute P. falciparum malaria, even without adverse signs is always highly dangerous and unpredictable. The patient’s condition can deteriorate dramatically even after prompt hospitalization and apparently effective antimalarial treatment. Multiorgan dysfunction may proceed apace even after parasite clearance and will require everything that modern critical care medicine can offer.

Malaria has afflicted humankind for millennia and continues to do so today. Human plasmodia have evolved together with their hosts from the plasmodia of non human primates. Plasmodia have had a more profound effect on human history than any other infectious agent.

Malaria affects the health and wealth of nations and individuals alike. It is understood to be both a disease of poverty and a cause of poverty. Malaria has significant measurable direct and indirect costs, and has recently been shown to be a major constraint to economic development. In some countries with a heavy malaria burden, the disease may account for as much as 40% of public health expenditure, 30-50% of inpatient admissions, and up to 50% of outpatient visits.

Science still has no magic bullet for malaria and many doubt whether a single solution will ever emerge. The Roll Back Malaria Initiative of WHO has an objective—to halve the world’s malaria burden by 2010.10 Towards this end it employs effective and low-cost strategies for the prevention, treatment, and control. Prevention of malaria in pregnant women, through measures such as Intermittent Preventive Treatment and the use of insecticide-treated nets results in improvement in maternal health, infant health and survival. Prompt access to treatment with effective up-to-date medicines, such as artemisinin-based combination therapies (ACTs), saves lives. If countries can apply these and other measures on a wide scale and monitor them, at least the burden of malaria will be significantly reduced.

REFERENCES


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*Consultant Physician, PD Hinduja Hospital, Veer Savarkar Road, Mahim, Mumbai 400 016.
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**Announcement**

**State Chapter and City Branches**

**Attention Chairmen/Secretaries**

The API Annual General Body Meeting held at Patna on 31st January 2006, passed the norms for affiliation of State Chapter/City Branches to the API Headquarters. All Chairmen/Secretaries of the State Chapters/City Branches of API should send the names of the Office Bearers and other details of the Chapters/Branches so that the norms can be mailed to them.

Sd/-

Dr. Sandhya Kamath
Hon. General